26 Mar 2001, 8:00 am - 26 Mar 2001, 6:00 pm

Short Course on Soil Dynamics in Engineering Practice/Speakers

Shamsher Prakash
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SHORT COURSE ON
SOIL DYNAMICS IN ENGINEERING PRACTICE

Day 1
8:00 AM - 11:00 AM
SOIL DYNAMICS AND MODELING
Problems of dynamic loading of soils, seismic loading, other sources of dynamic load, ground motion associated with earthquakes, effects of earthquakes on structures, damage during earthquakes, engineering vibrations, sensitivity of humans to vibrations. Single and Multiple Degrees of System. Natural Frequencies, Springs and Dashpost, Material and Radiation Damping, and Idealization of structure for analysis. Free and forced vibrations. Source and magnitude of damping in structures. **Shamsher Prakash**
11:00 AM - 12:00 PM Work Shop
12:00 PM - 1:00 PM Lunch Break
1:00 PM – 4:00 PM
DYNAMIC SOIL PROPERTIES AND CUMPUTATION MODELING
Measurements of dynamic soil properties at low and high strain. Cyclic strength. Use of wave propagation techniques. Non-linear soil behavior. Ground response to earthquakes. Data Bank, problems; selection of design parameters computational modeling including site amplification and 2D finite element modeling. **Ahmed Elgamal**
4:00 PM – 5:00 PM Work Shop

Day 2
8:00AM – 11:00 AM
LIQUEFACTION AND CASE HISTORIES
Liquefaction of soils. Settlement and spreading. Methods of analysis. Shaka 91, typical results remedial measures against liquefaction. Cyclic: A nonlinear finite-element code http://casagrande.ucsd.edu/ Case Histories. **Ahmed Elgamal**
11:00 AM – 12: 00 PM Work Shop
12:00 PM - 1:00 PM Lunch Break
1:00 PM - 4:00 PM
RETAINING WALL UNDER SEISMIC LOADING
Static and dynamic earth pressure. Design of retaining walls. Displacement analysis of rigid retaining walls and abutments. Design procedure. Design problems. Design charts, and retrofit of existing structures. **Shamsher Prakash**
4:00 PM - 5:00 PM Work Shop

Day 3
8:00 AM – 11:00 AM RESPONSE SPECTRA AND APPLICATION
Response spectra for force-excited systems. Design approaches for dynamic loads. Experimental determination of dynamic system properties. Euro -, code and uniform building code recommendations. **Ahmed Elgamal**
11:00 AM - 12:00 PM Work Shop
12:00 PM - 1:00 PM Lunch Break
1:00 PM – 4:00 PM
PILE FOUNDATION UNDER SEISMIC LOADING
Piled foundations under static, dynamic and seismic loadings: Overview of models and methods of analysis. Simplified models. Pile response and dynamic impedance of single piles in vertical, horizontal and rocking loading. Dynamic response of pile groups to seismic loading. Interaction between piled foundations and superstructures. Design considerations. Introductions to Pilay code. Case studies. **Shamsher Prakash**
4:00 PM – 5:00 Work Shop

SPEAKERS

Ahmed Elgamal, Ph.D

Ahmed Elgamal received his Ph.D. from Princeton University. He joined UCSD in 1997 as Professor after a post-doctoral appointment at the California Institute of Technology (1985-86), and faculty positions at RPI (1986-96), and Columbia University (1996-97). In 1990, he received the "**NSF, Presidential Young Investigator Award**" and in 1996 the "**Shamsher Prakash Research Award**," for young engineers. At RPI, he co-developed the RPI geotechnical centrifuge-testing center, and served as the Center Technical Director. His areas of research interest include experimental and computational simulation of liquefaction and retrofitting technologies for mitigation of earthquake hazards in soil systems, and interpretation of recorded downhole seismic response through system-identification procedures. He has conducted studies related to ground motion amplication, liquefaction and lateral spreading, dynamic response of earth dams and retaining walls, and seismic response of landfills. He is the author and coauthor of 100 technical publications.

Shamsher Prakash, Ph.D., P.E.

Shamsher Prakash, Course Director and Professor Emeritus University of Missouri-Rolla, obtained his M.S. and Ph.D. degrees at the University of Illinois, Urbana-Champaign. He is the author /coauthor of 250 papers, 90 professional reports; and Soil Dynamics, published by McGraw Hill in 1981: and is coauthor of Foundations for Machines, John Wiley, 1988, and Pile Foundations in Engineering Practice, John Wiley, 1990. Dr. Prakash has lectured extensively on vibrations problems in geotechnical engineering in several universities and conferences in Australia, Japan, the United States, Thailand, Singapore, Hong Kong, England, Switzerland, New Zealand, and India. He was Chairman of the Specialty Session on Soil Dynamics at the International Conference in Moscow in 1973, Discussion Leader of the Session on Stability of Natural Slopes at the San Francisco International Conference in 1985, General Reporter of the session on Static and Dynamic Pile Tests, 12th International Conference, Rio de Janeiro, Brazil, 1989; and Chairman of the International Conferences on Case Histories in Geotechnical Engineering in 1984, 1988, 1993 and 1998 and Chairman of the International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics in St. Louis in 1981,1991, 1995 and 2001, in San Diego, CA. His research interest are non-linear soil analysis, prediction and performance in Geotechnical Engineering. He is proficient in "**Yoga in Everyday Life**," and conducts free classes worldwide on invitation.